VOL. 2 NO. 4

AGRICULTURAL NEWS LETTER

A publication giving information on new developments of interest to agriculture, based on the work done by chemists and technical men of the du Pont Company and its subsidiary companies.

This issue contains:

An announcement of a new contact insecticide

Data on the treatment of barley

A report on the control of ants.

Information on field work in the control of plant diseases and crop pests from data of the United States Department of Agriculture and state agricultural experiment stations.

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ANNOUNCING A NEW CONTACT INSECTICIDE

The Grasselli Chemical Company announces a new synthetic, organic contact insecticide, which has been called "Loro."

According to the manufacturers' reports, Loro is an entirely new chemical compound which will be marketed as a 100% active contact insecticide. This compound, after development in the laboratories was subjected to evaluation tests as an insecticide. Strong indications of insect killing powers were found. After additional refinement through laboratory processes, it was subjected to many commercial tests on floral and vegetable crops in the greenhouse and field.

It was accepted by commercial growers after several months of trials because of certain outstanding characteristics. It proved to be non-injurious, non-staining to carnations, snapdragons, chrysanthemums and other floral crops when sprayed on plants in full bloom, or in seedling or set stages. A high degree of killing power at very economical concentrations was shown on thrips, red spider, midge, and aphids of several species. On thrips, red spider and midge distinct egg-killing powers were shown.

When sprayed in greenhouses, it has a pleasant odor. It mixes well with waters of various degrees of hardness and may be applied with other standard spray materials including manganese arsenate and fluorine compounds.

In field trials on commercial vegetable crops, the past winter in Florida under very severe conditions, Loro, according to statements of the Grasselli Chemical Company, demonstrated complete safety to a variety of crops with practically complete control of several species of aphids, thrips and other insects. On onion thrips, every indication that Loro is practically a complete control for that insect was demonstrated under Florida conditions.

In California, Loro, is, according to authoritative reports, controlling citrus red spider, and certain scale insects satisfactorily.

Reports from several state entomologists indicate that it has high killing power on adults and eggs of certain insects. Reports covering control of miscellaneous insects, such as the boxwood leaf miner and boxwood mite are being forwarded to the manufacturers of Loro from time to time.

Preliminary investigations indicate that the new insecticide has possibilities as a control for codling moth and other pests on a variety of fruits. It may also be absorbed on inert carriers and applied as a dust to control certain insects.

It is non-toxic to humans when sprayed or when present on fruits or vegetables as residue. This statement is based on a thorough toxicological exploration of the product by a recognized toxicologist.

CHICKEN CANNIBALISM CONTROL

Poultry raisers report that young chicks have a tendency to pick at everything bright. Often they will pick to death another chick which becomes slightly scratched or injured because they are attracted by the sight of blood.

A poultry authority has conducted some experiments which indicate that blue Cellophane can be successfully used to control this trouble. The Cellophane is simply placed in wooden frames similar to those used for wire screens and then fitted into the windows of the chicken houses. The resulting blue light in the coop makes a spot of blood appear black and hence the chicks are no longer attracted to injured chicks.

GETTING RID OF ANTS

Note:- "Cyanegg," the registered trade mark name of the du Pont Company for its sodium cyanide, minimum strength 96%, molded in the form of eggs, weighing approximately one ounce each, which is used for killing ants, is manufactured by the R. & H. Chemicals Department of the E. I. du Pont de Nemours & Company, Wilmington, Delaware. --- Editor.

Ants are a nuisance at any time of the year. But in the fall their presence becomes more annoying, and they cause considerable loss in seed beds by carrying off seed. In addition, they may cause indirect injury by lending aid to other destructive insects.

Mr. J. R. Watson, Entomologist of the Florida Experiment Station, gives the following method for the control of ants, in the Florida Quarterly Bulletin of the Department of Agriculture, Vol. 39, No. 3.

"Ants in the nest are most easily and economically killed by a solution of cyanide. Either sodium, calcium or potassium cyanide may be used, but the first two are cheaper. Dissolve an ounce of the cyanide in from two to four quarts of water. With a cane or sharp stick punch a hole a foot or more deep in the center of the nest and pour into it a fluid ounce or more of the solution. When the liquid has soaked away, cover the hole with earth and tramp the surface solid, in order to confine to the nest the fumes which the liquid will give off. It is best to do this in the early morning or at night when most of the ants are at home. Those ants not in the nest when it is gassed, together with those not killed by the treatment, will usually make a new nest near the old one. These new nests may be similarly treated a few days later."

CONTROL FOR THE SOUTHWESTERN CORN BORER:-

FROM UNITED STATES DEPARTMENT OF

AGRICULTURE TECHNICAL BULLETIN 388

The southwestern corn borer causes severe damage to corn in the southwestern states and is gradually increasing its range north and east towards the major corn growing sections of the United States.

The borer is closely associated with the corn ear worm and in the early stages of life history is easily mistaken for the corn ear worm.

United States Technical Bulletin 388 summarizes the results of several years' tests using arsenates, fluosilicates, nicotine, oils.

This bulletin concludes that barium fluosilicate 80% (Dutox) applied as a dust gave the highest degree of control over all other materials, including sodium fluosilicate and cryolite. Injury occurred but was considered insignificant - for the corn plant easily outgrew the injury in a week's time following the dust application.

TREATMENT OF BARLEY

The treatment of barley is becoming an important question with farmers in all parts of the country. State Agricultural Colleges, private investigators, chemists and others have been working on the subject in order to obtain better crops. The following is from the Department of Plant Pathology, New York State College of Agriculture, Ithaca, N. Y., Circular for 1934. It is entitled, "Treatment of Barley Seed," and states:

> "Fortunately, the covered smut and some of the intermediate forms of smut as well as stripe can be controlled by treatment with certain organic mercury dusts. Ordinary (2%)* Ceresan has proved effective when used at the rate of three ounces to one bushel of grain. Recently experiments in other states indicate that new improved Ceresan is effective when used at the rate of one-half ounce to a bushel of seed. Some device is needed to mix the dust and grain thoroughly. A barrel, fitted with baffle boards, which can be rotated, will answer the purpose. The treated seed is poisonous and should not be fed to stock."

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*(Contents in brackets are our insertions)

FURTHER DATA ON TREATMENT OF BARLEY

The Iowa State College of Agriculture and Mechanic Arts Extension Service, Circular P. D. - 303, entitled, "Barley Diseases in Iowa," by R. H. Porter, discusses the subject as follows:

> "Seed treatments - Before any barley is treated for diseases it should be thoroughly fanned to remove weed seeds, smut balls and other diseased kernels. The following materials may be used for the control of certain barley diseases.
>
> "1 - (2%)* Ceresan: This dust at the rate of three ounces per bushel on barley will control covered smut of barley, barley stripe and seedling blight caused by the spot blotch organism and by the scar organism. Its cost is rather high, running at about ten cents per bushel.
>
> "2 - New Improved Ceresan: This is a new product marketed by the Bayer-Semesan Company. It contains a different mercury compound from the old (2%)* Ceresan and since the percentage of active mercury is higher than in the old, much less of the dust per bushel is required.
>
> "New Improved Ceresan has been tried experimentally by the Botany and Pathology Section of the Experiment Station for two years on small seed lots. The extension pathologist has used it one year on oats, barley and flax on a field basis. It apparently is satisfactory to use on barley for the control of the same diseases as are listed under old (2%)* Ceresan. The cost for the new dust is 2 1/3 cents per bushel."

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*(Contents in brackets are our insertions)

REPORTS ON HOW UREA AND AMMONIA NITROGEN RESIST SOIL LEACHING

Readers of our Agricultural News Letter will recall that in our last issue we featured an article on the use of Urea for potato fertilizers and described the results of experiments in various potato growing states. We now present the results of experiments on the leaching of different nitrogenous fertilizers as outlined in Connecticut Agricultural Experiment Station Bulletin No. 326, 1931. This bulletin states:

"In these experiments a sandy loam soil was placed in cylindrical tanks twenty inches in diameter and twenty inches deep. Different nitrogenous fertilizers were applied at the rate of 200 pounds of nitrogen per acre per year and the tanks were cropped with tobacco. All leachings from the tanks were collected and analyzed for nitrogen and other constituents. Some of the data for the two growing seasons are given in the following table:

LOSS OF FERTILIZER NITROGEN BY SOIL LEACHING

SOURCES OF NITROGEN	Loss of nitrogen per acre during the growing season (May 26 to Nov. 25) 1929 and 1930		
	Average Nitrogen Content of Leachings (Total for Season)	Average loss from Fertilizer (Total for Season)	Percentage loss of Nitrogen based on 200 pounds added per acre
	Pounds	Pounds	Per Cent
Nitrate of Soda	77.7	63.5	31.8
Sulphate of Ammonia	33.0	18.8	9.4
Ammonium phosphate	40.9	26.7	13.4
Urea	41.2	27.0	13.5
Cottonseed meal	39.1	24.9	12.5
Castor Pomace	38.2	24.0	12.0
Dry Ground Fish	36.1	21.9	11.0
No Nitrogen	14.2	--	--

"These data show that out of 200 pounds of nitrogen applied per acre as urea only 27.0 pounds were lost by leaching during the period May 26 to November 25. The losses from cottonseed meal, castor pomace, fish meal and dried blood were very similar to the loss from urea. The loss from nitrate of soda was 63.5 pounds, or 31.8 percent of the nitrogen applied. Only 18.8 and 26.7 pounds of nitrogen were lost from ammonium sulphate and ammonium phosphate, the two nitrogen compounds formed when superphosphate is treated with anhydrous ammonia or urea-ammonia liquor."

Field experiments confirm these leaching data. Anderson, et al, writing in the same bulletin, say:

"After a leaching rain, when all the available forms of nitrogen (nitrates mostly) have been washed away and the plant is in danger of being checked in its growth, urea seems to possess the ability of changing to an available form more quickly than cottonseed meal or other organics. It has been observed during every wet year that tobacco on the urea plot suffers but little from leaching, less so in fact than the cottonseed meal plot."

BROWN PATCH AND 'DOLLAR SPOT'

More fine turf of golf greens and lawns are ruined by diseases such as brown patch and 'dollar spot' than from any other known cause. Hardly a golf club in the country has escaped damage from one or the other of these diseases.

The same chemical skill and experience which is being used to protect crops has also been employed to develop materials which will prevent these grass or turf injuries.

In order to familiarize those interested in these diseases, the following facts concerning brown patch and 'dollar spot' are presented --- Editor.

Brown Patch

Brown patch, which is caused by Rhizoctonia Solani, is more prevalent in the southern section of the bent grass area. It is favored by warm humid conditions and is more severe during warm, rainy or hot sultry periods of the summer.

Brown patch appears suddenly as discolored areas ranging in size from very small spots up to patches of several feet or more in diameter. Around the borders of new brown patch spots where the fungus is still active and spreading, a dark ring or 'smoke-screen' frequently will be found. The grass in the ring has the appearance of being scalded or smoked with a lamp.

New spots examined in the morning while the grass is wet, may be covered with a fine cobweb-like growth which is the mycelium of the fungus. It is this mycelium that enters the breathing pores of the grass blade and feeds on the plant juices. As soon as the sun is high enough to dry the grass, this cobweb growth disappears and the discolored grass blades shrivel and die, giving the patch the typical color from which it is named. The stems and runners of the plants are not killed, except in severe cases.

On the day following the attack by brown patch, the smoky ring of blackened grass may again be noticeable around the margins of the spots. This enlargement of the circle shows the fungus is still active.

(continued on next page)

Rhizoctonia Solani, the fungus causing brown patch, occurs in almost all soils in its resting stage as small black corky bodies known as sclerotia. These sclerotia are distributed in compost, on the feet of birds, animals, players, and by mowing machines.

'Dollar Spot'

'Dollar spot' is prevalent throughout the country and may occur at almost any time during the growing season. It may occur suddenly and overnight under conditions favoring brown patch, and also earlier and later in the season.

'Dollar spot' occurs in more or less clearly defined spots of varying sizes that seldom exceed the diameter of a silver dollar, from which it gets its name. The grass is killed in the affected areas and as it withers, it turns a bleached brown color. It gives the turf a moth-eaten appearance. Unlike brown patch, the 'dollar spots' do not grow in size but multiply in number. They may become so numerous as to destroy large areas of turf and appear like brown patch.

The source of infection of 'dollar spot' has not been definitely established. The disease is known to be spread by sclerotia and possibly mycelium, by mowing machines and other mechanical equipment, and by the feet of players, birds and animals.

The Bayer-Semesan Company has made a special study of these and other diseases which attack grass or turf and has prepared a program for preventing them which they will be glad to send on request.

A QUICK JOB WITH DYNAMITE

A rather unusual use of dynamite, as an aid in taking out standing trees is reported from the McComb Subsistence Homestead at McComb, Mississippi, where work is being done under the auspices of the Subsistence Homestead Division of the Department of the Interior. At that place, in order to save time, numbers of rather large standing trees had to be removed. The problem was solved by employing a combination of tractor and dynamite. The smaller growth was pulled out by the tractor. When it came to the larger trees, a long cable was rigged from the tractor to a point as high as possible in the tree to be uprooted. A light charge of dynamite (depending, of course, on the size of the tree) was placed under the roots. When everything was ready, the signal was given, the cable tightened, and the dynamite detonated.

The report indicates that the operation is a successful, economic and time-saving one.

TREATMENT OF VEGETABLE AND FLOWER SEEDS

Vegetable and flower growers will be interested in the following which is taken from a circular from the Division of Plant Pathology and Botany at the University of Minnesota Farm, St. Paul, Minn. It is entitled, "Timely topics on Plant Disease Control," and is by R. C. Rose, extension plant pathologist.

> "Treat seed before planting - One of the most satisfactory disinfectants for most flower and vegetable seed is the organic mercury compound known as Semesan. It may be mixed with water and used as a liquid treatment or the dust may be applied to the seed in dry form by shaking the disinfectant and seed together in a tight container. The dry treatment is considered more simple and satisfactory by most people. Experiments have shown that cauliflower, cabbage, tomatoes, and peppers have made improved stands as a result of the Semesan treatment. It is very important to follow the directions of the manufacturing company regarding the amount of dust necessary for the different kinds of seed. The dust adheres so readily to seeds with rough surfaces, such as the tomato, that the seed may carry an excess amount of dust which may cause seed injury. There is little danger from excess dust clinging to seeds with smooth surfaces.
>
> "Treat soil with chemicals - In recent years the use of chemicals for soil treatment has greatly increased. One popular method is to apply two applications of a 25/100% solution (see directions on container) of Semesan to the young plants; the first treatment soon after the plants are up, and the second ten days later. The liquid is poured over the plants in sufficient amount to moisten the soil thoroughly at the base of the stems. The combination of seed and soil treatment with Semesan has given excellent control of damping-off even when other conditions favor the disease."